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(71) Applicant (for all designated States except US): **AP AUTOMOTIVE SYSTEMS, INC.** [US/US]; 315 Matzinger Road, Toledo, OH 43612 (US).

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**Published:**

— With international search report.

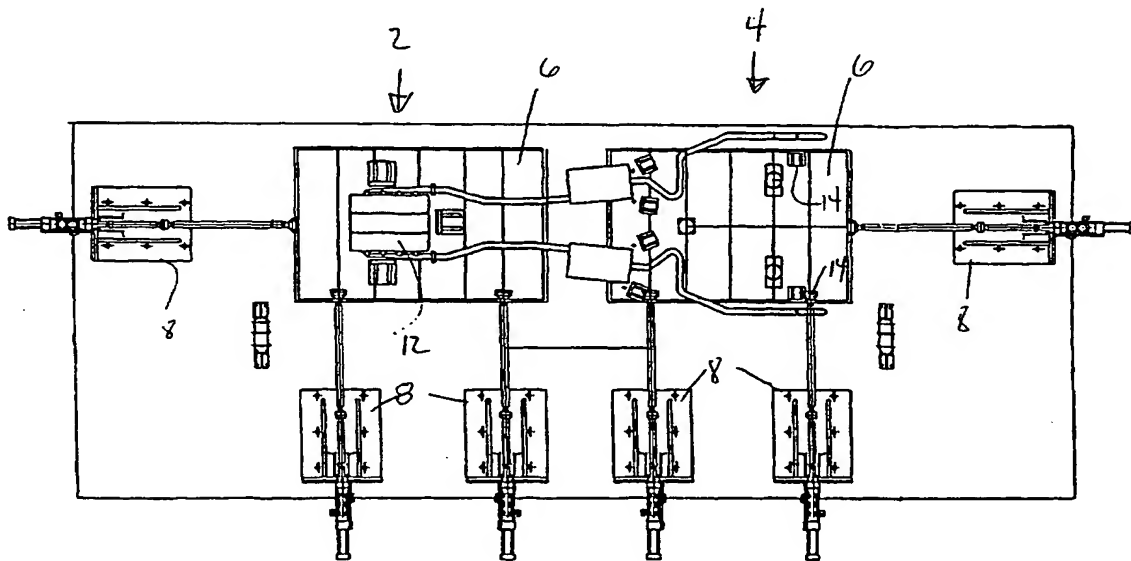
(72) Inventor; and

(75) Inventor/Applicant (for US only): **ZHU, Xuegeng** [US/US]; 3150 Middlesex Drive, Toledo, OH (US).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(74) Agents: **BRODY, Christopher, W. et al.**; Clark & Brody, Suite 600, 1750 K Street, NW, Washington, DC 20006 (US).

(54) Title: **DUAL MAST SYSTEM FOR SIMULATION TESTING**



(57) Abstract: A simulation testing system and method for testing an automobile system or component(s) such as an exhaust system (14) comprises first and second multi-axis simulation tables. One part of the exhaust system is supported by one of the tables with another part being supported by the other table. Each table includes hydraulic actuators (8) capable of imparting motion to the tables in a number of directions. The tables are independent from each other so that the motion imparted to one table can be distinct and separately controlled from that motion imparted to the other table. By arranging the tables so that the motions can vary between the two tables, more realistic simulation testing can be performed on the system or component being tested.

**WO 01/14845 A1**

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To: CHRISTOPHER W. BRODY  
CLARK & BRODY  
1750 K STREET, NW  
SUITE 600  
WASHINGTON, DC 20006

## PCT

### NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of Mailing  
(day/month/year)

**03 APR 2002**

Applicant's or agent's file reference

70991-0408

#### IMPORTANT NOTIFICATION

International application No.

PCT/US00/20790

International filing date (day/month/year)

23 AUGUST 2000

Priority Date (day/month/year)

25 AUGUST 1999

Applicant

AP AUTOMOTIVE SYSTEMS, INC.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

#### 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

ROBERT RAEVIS

Telephone No. (703) 305-4900

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 70991-0408	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/20790	International filing date (day/month/year) 23 AUGUST 2000	Priority date (day/month/year) 25 AUGUST 1999
International Patent Classification (IPC) or national classification and IPC IPC(7): G01M 17/00 and US Cl.: 73/865.6		
Applicant AP AUTOMOTIVE SYSTEMS, INC.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  21 MARCH 2001	Date of completion of this report  24 MARCH 2002
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer <u>Shawn J. Hyppé</u>  ROBERT RAEVIS
Facsimile No. (703) 305-3230	Telephone No. (703) 305-4900

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/20790

**I. Basis of the report**1. With regard to the **elements** of the international application:\*

the international application as originally filed



the description:

pages 1-4 , as originally filed  
pages NONE , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_



the claims:

pages 5-7 , as originally filed  
pages NONE , as amended (together with any statement) under Article 19  
pages NONE , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_



the drawings:

pages 1-2 , as originally filed  
pages NONE , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_



the sequence listing part of the description:

pages NONE , as originally filed  
pages NONE , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:



the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).



the language of publication of the international application (under Rule 48.3(b)).



the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

contained in the international application in printed form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:the description, pages nonethe claims, Nos. nonethe drawings, sheets/fig none5. ☐ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\*Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/20790

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. statement**

Novelty (N)	Claims	<u>1-19</u>	YES
	Claims	<u>NONE</u>	NO
Inventive Step (IS)	Claims	<u>8-11, 16, 19</u>	YES
	Claims	<u>1-7, 12-15, 17, 18</u>	NO
Industrial Applicability (IA)	Claims	<u>1-19</u>	YES
	Claims	<u>NONE</u>	NO

**2. citations and explanations (Rule 70.7)**

Claims 1, 2, 6, 3, 4, 7, 12, 13, 14 and 18 lack an inventive step under PCT Article 33(3) as being obvious over Petersen et al.

Petersen et al. teaches (Figures 1, 6, 7) a simulation test system including individual loading actuators that is displaced in two Y-Z directions.

As to claims 1, 2, 6, 3, 4, 7, 12, 13, 14 and 18; the spindles 24 attach the the vehicle under test, thus supporting the vehicle like a table.

Claims 1, 2, 5, 3, 4, 12, 13, 14, 15, 17 and 18 lack an inventive step under PCT Article 33(3) as being obvious over CONS-ASSEMBLY INSTR.

CONS teaches (ABSTRACT) a simulation test system including a base (table) 1 with motor, and second base 1 with torque applicator.

As to claims 1-4 and 18; the bases appear to be tables. In addition, testing of shafts involves testing under "simulated" load conditions, and thus, the system simulates.

Claims 1-5, 12-15, 17 and 18 lack an inventive step under PCT Article 33(3) as being obvious over Borg.

Borg teaches (Figure 1) a vehicle tester that connecting means 22, 24 to apply forces to a vehicle.

As to claims 1-5 12-15, 17 and 18; the means 22, 24 look like tables, and the device is used for "simulating" (col. 1, line 11) terrain conditions, suggestive of a simulation tes system.

Claims 8-11, 16 and 19 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest the combination of each of those dependent claims with their respective base/intermediate claims.

Claims 1-7, 12-15, 17 and 18 meet the criteria set out in PCT (Continued on Supplemental Sheet.)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/20790

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

V. 2. REASONED STATEMENTS - CITATIONS AND EXPLANATIONS (Continued):

Article 33(4), because the invention is useful to the industry.

----- NEW CITATIONS -----

NONE

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US00/20790

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) :G01M 17/00

US CL :73/865.6

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 73/865.6, 865.8, 965.3, 662, 663, 667-672

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
NONE

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,263,809 A (PETERSEN et al) 28 April 1981 (28.04.1981), Figs. 1, 6, 7.	1-4, 6-7, 12-14, 18
A	US 3,827,289 A (BORG) 06 August 1974 (06.08.1974), Fig. 1.	1-5, 12-15, 17-18
X	SU 0711411 A (CONS-ASSEMBLY INSTR) 28 January 1980 (28.01.1980), abstract.	1-4, 18
A	US 3,713,330 A (LENTZ) 30 January 1973 (30.01.1973), see entire document.	1-19



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

02 OCTOBER 2000

Date of mailing of the international search report

08 NOV 2000

Name and mailing address of the ISA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

ROBERT RAEVIS

Telephone No. (703) 305-4900